

**One More Saturday Night:  
Food Stamp Timing and Monthly Consumption Patterns**

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**Abstract**

In this paper we examine the relationship between the timing of food stamp receipt and consumption patterns. We combine data on state distribution dates with scanner data on a panel of households. Consistent with previous work we find that purchases of a variety of goods are higher on receipt days. Additionally, we find that when receipt days are more likely to be on weekends, total monthly consumption within the same households is affected. In particular, monthly purchases of beer are higher when food stamps are distributed on a Saturday or Sunday than in months that benefits are distributed on weekdays in food stamp eligible households. For these households, total beer purchases are between 4 and 7 percent higher in those months.

Keyword: SNAP Benefits, Food Stamps, EBT, Impatience

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## **Introduction**

There is an extensive and well developed literature that looks at the effect of food stamp program participation on outcomes. Not surprisingly, a great deal of interest is focused the effectiveness of the program in accomplishing its stated objectives: ameliorating food insecurity and providing a nutritionally adequate diet (Daveney and Fraker, 1989; Fraker, 1990; Daveney and Moffitt, 1991; Gunderson and Zilliack, 2003). Another vein of literature focuses on the program's effect on health outcomes, for example, obesity (Gibson, 2003; Baum 2011) and child health (Currie, 2003, Currie and Moretti, 2008; Almond, Hoynes and Schanzanbach, 2011). While others focus on the labor market affects of program participation (Fracker and Moffitt, 1988; Hoynes and Schazzenbach, 2012).

Recently a separate literature has emerged that focuses not on participation, but on the timing of benefits and subsequent behavior over the food stamp cycle. Starting with Wilde and Ranney (2000), consumption has been shown to decrease during the food stamp month. They attribute this to a combination of transportation constraints and food spoilage concerns that lead to households making fewer, but larger shopping trips just after receiving benefits. Shapiro (2005), also using survey data, finds a 10-15% decline in overall consumption during the food stamp cycle. He finds the same pattern in households that shop frequently, contrary to the hypothesis put forward in Wilde and Ranney. Further, he rules out other explanations like household competition for resources, resources transfers between households and over-optimism, concluding that this is evidence of quasi-hyperbolic discounting by recipients.

Other work looking at data on purchases tell a similar story. Wilde and Andrews (2000) look at the purchasing behavior of a variety of benefit recipients around the timing of benefit receipt. Among those receiving both welfare benefits and food stamps, over 50% of the food stamp benefits are spent within three days. Damon, King and Leibtag (2013) show that the type of stores that recipients frequent changes during the food stamp month. Early in the month, recipients are more likely to shop at grocery stores and "big box" retailers and more likely to eat at home. Later in the month purchases from convenience stores are more common.

Hastings and Washington (2010) use scanner data from a single large supermarket chain in Nevada to study the monthly purchasing patterns of public benefit recipients as well as store responses at the store level. Nevada is a state that issues all food stamps and cash assistance benefits on the first of the month, so they are able to link people who pay with a benefits card to their purchases and to when in the monthly benefit cycle they make them. They document a substantial present bias in purchases across broad categories of goods. They find this decrease is largely due to a reduction in quantity purchased as opposed to substitution to lower quality or generic goods. Further, they observe that store pricing is pro-cyclical and that households could have more purchasing power if they delayed purchases to later in the month. This provides further support for the notion that these households are extremely impatient.

In this paper, we use data on a panel of households from across the United States to look at the *within household* consumption patterns of food stamp eligible families across the monthly distribution cycle. We focus on the purchases of household staples; bread and milk, as well as beer, soft drinks and tobacco and the timing of food stamp distribution dates. Beer and Tobacco purchases are among the goods that are not eligible for food stamp purchases. While households are able to use benefits to directly pay for soft drinks, there are calls to add soft drinks to the ineligible category.

Similar to the pattern found by Hastings and Washington we see that on food stamp receipt dates total purchases are higher for all goods, even when controlling for whether the household did any shopping on those days. Since we have information on purchases at all locations and not just one large retailer, we are able to rule out the possibility that the purchasing pattern is driven by changes in the type of retailer through the month seen by Damon, King and Leibtag. Further, while Hastings and Washington show this pattern by looking at weekly purchases, we find the same results when only looking at the day of receipt.

However, what really distinguishes our results from previous work is that we find evidence that food stamp timing not only affects the purchasing cycle during the month, but that whether the benefits are received on a weekend can affect the total monthly consumption. In particular, we find that in households that are food stamp eligible total monthly purchases of beer are higher

when the benefit receipt date is on a weekend than in those same households when the receipt date is during the week. We find no such effect on tobacco, soda, milk and bread once the total number of weekend days in a month is accounted for. Further, this effect is limited to food stamp eligible households. The size of the effect on beer is between 5 and 8 ounces. When we restrict the sample to households that regularly consume beer in a month, the size of the effect increases to between 33 and 51 ounces of beer per month. For both of these groups this represents a 4-7% increase in purchases.

Since we use data on households across many states, including states that issue benefits across multiple days in a month, one limitation to our daily-level investigation is that we do not always know which day a household will receive benefits. Rather, we use the probability that a household that receives benefits would receive benefits on a particular date as our treatment variable. This is less of a limitation for our analysis of monthly purchases, as we know that all households are at least treated sometime in the month. However, we still do not know for sure if the treatment is on a weekday or a weekend and so we use the share of treatment days that are weekend days as our treatment variable. In addition to enlarging the sample, inclusion of all states also allows us to control for possible 1<sup>st</sup> of the month pay-day effects. To check the robustness of the treatment variable, we also perform the analysis on the subsample of households in states that just issue benefits on a single day of the month. In these states we know with certainty when households receive benefits and we find an almost identical increase of between 5 and 7 ounces (4-6%).

Our results provide another piece of evidence in favor of the impatience explanation for the lack of consumption smoothing in benefit receiving households. As noted by others, this suggests that households may be better off if benefits were distributed to households in multiple installments within a month. Further, our results imply that restricting food stamp distribution to weekdays would result in less alcohol consumption and potentially some health benefits for recipient households.

The paper is structured as follows: section 2 describes the data, section 3 the econometric specifications for the analysis, section 4 presents main results, section 5 discusses the results and section 6 concludes.

## **Data**

The principle dataset used in this paper is the Nielsen Homescan Consumer Panel Dataset (NHCPD). The NHCPD is collected and maintained by the Nielsen Corporation, and is a demographically and geographically balanced panel based on a sample of households from all U.S. states and major metropolitan areas. The dataset contains approximately 40,000 households from 2004 to 2007, and 60,000 households from 2008-2011, providing us with a rich panel of household purchase data from all shopping trips at a wide range of retail stores, including liquor stores, wine shops, and grocery stores/supermarkets. The NHCPD does not, however, contain information on purchases at restaurants, bars or other similar locations. It is worth noting that the raw data is extremely detailed, as each participating household is provided with a scanning device to record the UPC code of every item they purchase on every shopping trip and report where the item was purchased. Hence, before product and time aggregation, each unique UPC code is treated as a separate item in the data. For example, a twelve-pack of 12oz Coors beer cans is coded as separate from a twelve-pack of 12oz Coors beer bottles. Thus, a single beer brand may have dozens of UPC codes based on unit size, packaging, and number of units. Even after aggregating purchases by general product type (e.g. beer, soda, milk, etc.) and day, our sample includes between 16 and 52 million counts of household product purchases to inform our analysis. Ultimately, because the NHCPD is a household panel, it provides us with the ability to identify within household changes in purchase habits in response to SNAP treatment.

Of course, the NHCPD does present some concerns. First, it is a self-reported dataset, so measurement error may be an issue. In particular, when measuring purchases of products such as alcohol or tobacco, individuals may under-report purchase habits (Ramstedt, 2010). Unlike other data sources which are retrospective in nature (as well as self-reported), the NHCPD is collected virtually in real-time, as participants can scan all the items they have purchased immediately upon purchase. However, since the scanning process is time consuming, there is also a concern about potential for sample selection and measurement error in the data set. Finally, Nielsen uses

a mixture of self-reported prices and store level prices as an estimate of prices instead of the actual price paid by the household. This is especially problematic when stores have promotional prices, which might be particularly salient among benefit receiving households.

Einav, Leibtag and Nevo (2010) perform a validation study on the NHCPD using a second data set from particular retailers. Overall, they conclude that the errors “are comparable to what is found in other commonly used data sets” and that there is no evidence suggesting that NHCPD suffers from worse measurement error than the retrospective surveys commonly used in this literature. However, this is not uniformly true. Among trips that are matched in both data sets they find that the quantity information matches 94% of the time, while the prices match only 48% of the time. As a result, we use as our outcome variable the quantity purchased as opposed to the total expenditure on categories of goods. This does not allow us to observe if there is a substitution from higher to lower quality during the month, although Hastings and Washington’s findings suggest that is unlikely.

Another limitation of the data is that we cannot directly observe whether the household is a recipient of food stamps, only if they are likely eligible. In general households are eligible to receive food stamps if they have less than \$2000 in assets and if their income level is below a certain level based on household size. Since we do not have information on household assets, we treat a household as eligible if it meets the programs income requirements<sup>1</sup>.

To determine the date of food stamp distributions we construct the monthly distribution schedule of Supplemental Nutrition Assistance Program (SNAP) benefits for 49 states and the District of Columbia from 2004-2011, excluding only the state of New York.<sup>2</sup> New York is excluded because New York City has its own schedule which changes on a month-to-month basis that we were unable to reconstruct.<sup>3</sup>

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<sup>1</sup> See Appendix Table 1 for a detailed description of the eligibility definition used.

<sup>2</sup> We are especially thankful to Christian Gregory who provided us with data on distribution dates.

<sup>3</sup> See Appendix Table 2 for a detailed description of the distribution schedule

As part of the 1996 welfare reform act states are required to issue food stamp benefits through the Electronic Benefit Transfer system (EBT)<sup>4</sup>. EBT recipients are issued an electronic card and benefits are automatically deposited once a month. In addition to some control over eligibility requirements and generosity, states are left to determine the distribution schedule for its participants. While each recipient only receives benefits on a single day in a month, in general, it is not the case that every household in the state receives benefits on the same day. States may choose to spread the distribution of benefits to recipients throughout the month, where recipients are then assigned a particular date semi-randomly (last name, SSN, case ID, etc) from the state distribution dates.

Distribution schedules differ across states in the number of days that benefits are issued, the degree to which days are spread across the month, and the particular days each month. In nine states benefits are issued on a single day in the month, while the most common schedule is for benefits to be distributed across the first ten days of the month. The largest number of distribution days is in Missouri, where benefits are distributed across the first 22 days of the month. Further, during the time period we are looking at there are changes in the distribution schedule in nine states. Consequently we have variation in the treatment day of the month and day of the week, both across states and over time to capitalize on for identification. Distribution changes are largely the result of states increasing the number of distribution days and increasing their dispersion throughout the month. This is favored by retailers who claim that it helps them manage staffing and supply chains (Associated Press, 2006).

In states that distribute food stamps on more than one day in a month, we do not know the actual date that a recipient receives benefits, but we can calculate the probability that recipient family would receive benefits on each day. Thus, our main treatment variable is the likelihood of food stamp receipt. We do however show that our results are robust to this concern by investigating states that distribute on one day only and, as such, receipt date can be known with certainty.

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<sup>4</sup>The USDA announced that all states completed the transition to EBT in June of 2004 (Atasoy, Mills and Parmeter, 2010).

## Methods

In order to isolate the impact of SNAP distributions on household purchasing behavior, we estimate several versions of the following general household fixed effects model on SNAP eligible households:

$$(1) \quad Y_{hst} = \beta_0 + SNAP_{st}\beta_M + X_{hst}\beta_X + \tau_t + \gamma_s + \delta_h + \varepsilon_{hst}$$

$Y_{hst}$  is a quantity purchased measure from a particular product category (i.e. ounces of beer purchased), for household  $h$  in states at time  $t$ .  $SNAP_{st}$  is the propensity that a particular household in state  $s$  is treated on a given day (as described in the data section).  $X_{hst}$  is a vector of household- and household head-level demographic characteristics, which includes individual or families of indicator variables for household size, household income, age, marital status, race, ethnicity, employment status, education status, presence of minor children (under 18 years old), and young children (under 6 years old). State-specific fixed effects, denoted by  $\gamma_s$ , absorb time-invariant differences in purchase patterns across states.  $\tau_t$  is a vector of time-fixed effects which account for year, month, day of the week, and “pay day” (defined as the 1<sup>st</sup> or 15<sup>th</sup> of each month) trends in household purchases that are common nationally.  $\delta_h$  are household fixed effects, which account for persistent differences in purchase habits across households over time, and is a very powerful control in this context.  $\beta_0$  is a constant coefficient and  $\varepsilon_{hst}$  is the error term.

The data provided for each good is restricted to only households that had at least one positive purchase of the product in question during the time period analyzed. However, at times we will restrict the sample to only households with frequent purchases. Including households that very rarely purchase a particular product, regardless of SNAP treatment, would mute the estimates, as the behavior of these households with regard to the products in question is unlikely to be impacted.

In order to account for the non-independence of observations from within the same household we cluster all standard errors at the state level. Statistical analyses were conducted using STATA version 13 (StataCorp, College Station, TX).

## Results

In our specifications we consider two types of outcome variables: purchases at the daily level and purchases at the monthly level. We present the results of these first by looking at the effect of food stamp receipt on daily purchases, which both provides a connection to the previous literature and general inference on the immediate impact of SNAP distribution of purchase habits. Then we present the effect of weekend receipt dates on total monthly purchases using 1) the entire sample 2) households in states with a single distribution date 3) a sub-sample of households that regularly purchase some alcohol each month.

### *Daily Purchases*

Table 1 presents the analysis of daily purchasing behavior for each good. In specification 1 we report the coefficient estimate of the probability of food stamp receipt on the quantities of each good. Of course, one mechanism that leads to higher purchases on days of food stamp receipt is the fact that recipient households are more likely to go shopping on those days. To allow us to compare receipt dates to other shopping dates, we also report for each good the effect of food stamp receipt with a control for shopping days (specification 2). In panel A we report the estimates for the food stamp eligible households and panel B reports them for the ineligible households.

[Table 1]

Among the eligible households, for all goods the coefficient is positive and statistically significant. Beer purchases are increased by 0.83 ounces (22%), cigarette purchases by 2.5 cigarettes (45%), soft drink purchases by 11.3 ounces (69%), milk by 4.3 ounces (45%) and bread by 1.2 ounces (68%) on food stamp distribution dates.

Beer purchases are no longer statistically significant when controlling for shopping trips, suggesting that the effect of food stamp receipt on beer purchases occurs indirectly through its effect on the likelihood of shopping in general. For the remaining goods there remains a positive and statistically significant effect although the coefficient is reduced in magnitude by 40-70%.

The size of these estimates is much larger in percentage terms than those found by Hastings and Washington, although their analysis measures effects differently. They report an overall 19% decline in purchases among recipient households across weeks (between the first week and the second week after receipt). For alcohol and tobacco they find a decrease of 3%. This is possibly due to the fact that we are looking at a day of receipt effect which might be much stronger than over the course of the week. Alternatively, it could be that our results are larger due to us capturing small retailers and utilizing household panel data, rather than store level scanner data, which allows for different controls and identification.

For the placebo group, as expected, the effect on beer, tobacco and bread is negligible and insignificant. Milk purchases are statistically slightly higher, between 0.20 and 0.30 ounces, on receipt dates, which is approximately 4-6% of the average daily milk purchases. Hastings and Washington report a similar 2% effect, albeit between week 1 and week 2 among non-benefit households of perishable goods. Surprisingly, soft drink purchases appear to be 1.1 ounces (14.5%) lower on food stamp distribution dates among the placebo group. This suggests there might be some underlying consumption pattern that is correlated with food stamp receipt dates. For example, if households are more likely to purchase soft drinks at the end of the month after benefits have been distributed, then this could explain the observed relationship.

### *Monthly Purchases*

In Table 2 we report the effect of the probability that a household receives benefits on a weekend on the household's total monthly purchases of each good. Since there are a substantial number of distribution dates early in the month, receipt on a weekend is also correlated with there being more total weekend days in a month. As a result, for each good we estimate the model with and without a control for the number of weekend days in a month. In Panel A we report the results for the eligible households, while panel B shows the results for the placebo group.

[Table 2]

For both the eligible and non-eligible households the share of weekend days affects the purchases of all goods (as, not surprisingly, more shopping is done on weekends). However,

even when controlling for the number of weekend days, the total purchases of beer in a month is 6.8 ounces higher among eligible households when it is more likely that they received benefits on a weekend relative those same households in months when they are more likely to receive benefits during the week. This is not true for the other goods or for the non-eligible households. These estimates indicate, using within-household variation, that SNAP eligible households shift purchase behavior toward beer when their monthly distribution day falls on a weekend, rather than a weekday.

### *Single Day Distribution States*

A limitation of the preceding analysis is that in most states we only know how *likely* it is that a household that receives benefits receives benefits on a particular date. To check the robustness of this result we estimate the model separately for just the states that issue benefits on a single day in a month. For these households we know exactly which dates are benefit dates. Unfortunately nearly all of these states issue benefits on the 1<sup>st</sup> of each month, which does not make it possible for us to distinguish between this and possible interactions with payday effects that may exist. In particular, even among non-eligible households we might see some change in behavior when payday is on a weekend.

[Table 3]

The results are robust, as the effect on beer purchases for the eligible households is again statistically significant and a similar magnitude (5.3 vs 5.5 ounces) as in the full analysis. Again there is no statistically significant effect on soda, tobacco, milk or bread when controlling for the number of weekend dates.

### *Regular Beer Purchasers*

While the size of the coefficient on total monthly beer purchases is small, it is possible that the effect might differ for households that drink frequently. To test this we again run the analysis for both the eligible households and placebo households on a sub-sample of households that purchase at least some beer in 2/3rds of the months (about 10% of households)<sup>5</sup>.

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<sup>5</sup> This is robust to alternate cutoffs of 1/2 or 3/4 of the months.

[Table 4]

The first two columns of each panel report the coefficient estimate from the weekend distribution date for households in all states, while the last two columns are the estimates from households in single day distribution states. Perhaps not surprisingly, the effect of weekend distribution dates is much larger in absolute terms and remains statistically significant. For households that are semi-regular beer purchasers, total monthly purchases of beer are 33 to 52 ounces higher on weekend receipt dates than those same households on non-weekend dates. This corresponds to a 4.5-7% increase, almost identical to the percentage change in the entire sample.

In a similar vein, we also further restrict our sample to those higher frequency households that purchase an above average quantity of beer each month. The results of this analysis demonstrate that the effect of weekend distribution dates is much larger in absolute terms and remains highly statistically significant after this restriction. For above-average higher frequency households, total monthly purchases of beer are 122 to 155 ounces higher on weekend receipt dates than those same households on non-weekend dates (p-value<0.05 in both models). This corresponds to an 8-10% increase in purchases during weekend treatment, which suggests that the effects are twice as large in percentage terms among households that are the largest beer purchasers.

### **Discussion**

Previous work on nutrition has established that dietary consumption differs on weekends as opposed to weekdays (Houser and Bebb, 1981). In addition to overall caloric intake being higher on the weekends, more energy comes from fat and consumption of alcohol is greater (Thompson, Larkin and Brown, 1986; Hanes, Hama, Guilkey and Popkin, 2012). Given this result it is perhaps not surprising that purchases of alcohol are higher when benefits are received on weekends. This is just a reflection of households deriving greater utility out of weekend consumption of alcohol. However, this alone does not explain why the receipt of benefits on a weekend would affect total monthly alcohol purchases.

One possible explanation is that households, consistent with previous findings, are extremely impatient at the same time as deriving greater utility from weekend consumption of alcohol. Thus, when benefits arrive on weekends households are more willing to trade-off future consumption of other goods for alcohol.

Alternatively, it may be the case that households are imperfectly maximizing their utility and much more likely to make errors when benefits arrive on weekends. This could be due to increased impulse purchases when they receive benefits on weekends. There is a substantial literature in the field of Marketing on impulse purchases that provides some reasons as to why we might believe that this is particularly salient for food stamp recipients on the date of receipt. Consumers are most likely to visit grocery stores and large retailers early in the food stamp cycle (Damon, King and Leibtag, 2013) and these are the stores where unplanned purchases are most common. Citing industry studies, Underhill (2009) makes the astounding claim that 60-70% of purchases in grocery stores were unplanned. Other work suggests that “major” shopping trips are associated with unplanned purchases (Kahn and Schmittlein, 1989). Finally, there is also reason to believe that this might be more prominent on weekends as another key factor is time spent in the store (Park, Iyer and Smith, 1989).

A third explanation could be that receipt of benefits on weekends alters the type of retailer that households visit, perhaps due to transportation constraints. If the retailers that households visit on weekends offer a different mix of options or prices, households might be choosing under, in essence, different budget sets on weekends as opposed to weekdays.

Our results also have implications for policy makers. First, these findings suggest that distributing benefits during the week as opposed to weekends might have some positive spillovers on household behavior through lower alcohol consumption. In addition to potentially better health outcomes this might also lower the costs associated with alcohol related driving fatalities. Cotti, Gordanier and Ozturk (2014) find that on food stamp distribution dates alcohol related fatal accidents are lower, but that this result is limited to distribution dates during the week. In this paper we find a potential mechanism for that difference in terms of higher purchases of alcohol on weekend distribution dates.

Our results also add to the growing number of papers (Shapiro, 2005; Foley, 2011; Hastings and Washington, 2010) that conclude that households might be better off if benefits were distributed in multiple payments throughout the month. Regardless of the mechanism that is causing higher monthly purchases of alcohol, we find strong evidence that purchases of multiple goods are much larger on the day of receipt. This complements the previous work that has showed declines in purchases and consumption throughout the month and suggests that benefit households are quite impatient.

Finally, we see little evidence that restricting beneficiaries from using EBT cards to purchase alcohol or tobacco is preventing households from making those purchases. While we do not directly test this, we observe that on benefit receipt dates purchases of these goods are higher. This is not surprising since households are able to shift cash from food purchases to these goods on receipt dates.

## **Conclusion**

Using a national panel data set of household expenditures we investigate the expenditure behavior of food stamp eligible households on food stamp distribution dates. Consistent with prior work we find a significant increase in purchases of goods on those dates. For non-eligible households we see no such spikes in purchases. This effect remains even when controlling for households shopping habits, suggesting that they not only are more likely to go shopping, but the size of the shopping trips is larger as well.

Further, we document a surprising effect on total monthly purchases based on when in the week benefits are received. In particular, monthly purchases of beer are higher within the same households when the benefits are more likely to have been distributed on weekends. We find this effect in all states and in states that just distribute benefits on a single day, where we know with certainty whether benefits were distributed during the week or on a weekend. This effect does not appear in the non-eligible households. Monthly consumption of other goods is unchanged by when in the week benefits are distributed, once we control for the total number of weekend days in the month.

We find that the size of the effect is between 4-7% regardless of whether we consider all households or just the households that regularly make monthly beer purchases, with larger effects (8-10%) for households that typically purchase larger quantities.

Our results provide further support that households are very impatient and distributing benefits more than once a month might improve welfare. Additionally, our results suggest that distribution of benefits during the week could also have positive effects. Future research into within week behavioral differences may shed light on the mechanisms that are behind our results.

## TABLES

**Table 1: Day of the Distribution Effect**

	Beer		Tobacco		Milk		Bread		Soft Drinks	
	[1]	[2]	[1]	[2]	[1]	[2]	[1]	[2]	[1]	[2]
<b>A: Eligible Households</b>										
Probability of SNAP distribution	0.83*** (0.277)	-0.20 (0.263)	2.49*** (0.621)	1.11** (0.486)	4.27*** (0.581)	1.39*** (0.283)	1.15*** (0.128)	0.64*** (0.067)	11.27*** (1.108)	6.57*** (0.776)
Shopping day dummy indicator		14.55*** (0.563)		14.98*** (0.805)		43.48*** (1.164)		7.60*** (0.154)		70.98*** (2.574)
Average Consumption	3.77		5.47		9.89		1.72		16.27	
Observations	7,111,238	7,111,238	7,224,916	7,224,916	15,957,662	15,957,662	16,203,582	16,203,582	16,082,111	16,082,111
R-squared	0.11	0.14	0.05	0.07	0.05	0.19	0.03	0.14	0.05	0.14
Adj. R-squared	0.11	0.14	0.05	0.07	0.05	0.19	0.03	0.14	0.04	0.13
<b>B: Ineligible Households</b>										
Probability of SNAP distribution	0.01 (0.087)	0.00 (0.086)	-0.09 (0.138)	-0.12 (0.134)	0.30*** (0.103)	0.20** (0.100)	0.01 (0.012)	-0.01 (0.013)	-1.09** (0.428)	-1.22*** (0.455)
Shopping day dummy indicator		7.08*** (0.271)		4.27*** (0.267)		22.03*** (0.740)		3.24*** (0.147)		32.52*** (0.854)
Average Consumption	1.69		1.49		5.02		0.73		7.42	
Observations	21,029,311	21,029,311	9,498,542	9,498,542	35,545,739	35,545,739	35,918,816	35,918,816	35,574,810	35,574,810
R-squared	0.05	0.06	0.04	0.04	0.06	0.13	0.04	0.09	0.04	0.08
Adj. R-squared	0.05	0.06	0.04	0.04	0.06	0.13	0.04	0.09	0.04	0.08

Robust standard errors in parentheses. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

*Note:* All these specifications also include year (2004-2011), state, month, day of the week, payday and household dummy indicators and controls for household size, age and presence of children, race, ethnicity, age and education of the household head and income of the household. Full set of results are available upon request.

**Table 2: Weekend Effect**

	Beer		Tobacco		Milk		Bread		Soft Drinks	
	[1]	[2]	[1]	[2]	[1]	[2]	[1]	[2]	[1]	[2]
<b>A: Eligible Households</b>										
Saturday- Sunday	8.28*** (2.494)	5.45** (2.597)	2.53 (2.997)	-1.23 (3.030)	2.65 (2.406)	0.26 (2.150)	1.02** (0.408)	0.31 (0.389)	15.50*** (5.142)	5.11 (3.136)
Number of weekend days		1.91*** (0.485)		2.53*** (0.672)		1.66*** (0.435)		0.49*** (0.095)		7.26*** (1.001)
Average Consumption	116.56		169.2		305.9		53.15		502.98	
Observations	233,791	233,791	237,533	237,533	524,634	524,634	532,720	532,720	528,727	528,727
R-squared	0.72	0.72	0.65	0.65	0.69	0.69	0.54	0.54	0.63	0.63
Adj. R-squared	0.71	0.71	0.64	0.64	0.68	0.68	0.52	0.52	0.61	0.61
<b>B: Ineligible Households</b>										
Saturday- Sunday	2.25* (1.227)	0.34 (1.114)	0.03 (1.209)	-0.92 (1.263)	3.61*** (1.214)	1.57 (1.409)	0.47 (0.423)	0.13 (0.488)	9.93** (4.063)	2.35 (4.376)
Number of weekend days		1.16*** (0.215)		0.62** (0.233)		1.27*** (0.220)		0.21*** (0.050)		4.72*** (0.510)
Average Consumption	52.2		46.19		155.3		22.67		229.46	
Observations	691,354	691,354	312,272	312,272	1,168,594	1,168,594	1,180,859	1,180,859	1,169,550	1,169,550
R-squared	0.55	0.55	0.52	0.52	0.68	0.68	0.56	0.56	0.55	0.55
Adj. R-squared	0.54	0.54	0.51	0.51	0.67	0.67	0.55	0.55	0.54	0.54
Robust standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05										
Note: All these specifications also include year (2004-2011), state, month, day of the week, payday and household dummy indicators and controls for household size, age and presence of children, race, ethnicity, age and education of the household head and income of the household. Full set of results are available upon request.										

**Table 3: Weekend Effect - States with One Distribution Day Only**

	Beer		Tobacco		Milk		Bread		Soft Drinks	
	[1]	[2]	[1]	[2]	[1]	[2]	[1]	[2]	[1]	[2]
<b>Eligible Households</b>										
Saturday- Sunday	7.26** (2.988)	5.35* (2.555)	0.28 (2.729)	-5.88 (4.248)	0.24 (2.208)	-0.98 (2.583)	1.01** (0.404)	0.63 (0.419)	7.11** (2.915)	0.84 (2.493)
Number of weekend days		2.72 (2.225)		7.69** (2.759)		1.61 (1.463)		0.51 (0.279)		8.37** (3.035)
Average Consumption	141.02		197.94		286.33		52.36		479.73	
Observations	14,152	14,152	14,587	14,587	32,123	32,123	32,560	32,560	32,320	32,320
R-squared	0.78	0.78	0.72	0.72	0.70	0.70	0.48	0.48	0.60	0.60
Adj. R-squared	0.77	0.77	0.70	0.70	0.69	0.69	0.46	0.46	0.58	0.58

Robust standard errors in parentheses. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

*Note:* All these specifications also include year (2004-2011), state, month, day of the week, payday and household dummy indicators and controls for household size, age and presence of children, race, ethnicity, age and education of the household head and income of the household. Full set of results are available upon request.

**Table 4: Weekend Effect, Beer Consumption: regular drinkers**

	All States		One Day States	
	[1]	[2]	[1]	[2]
<b>Eligible Households</b>				
Saturday- Sunday	51.71*** (15.789)	33.02* (16.698)	43.15* (19.696)	29.25* (15.919)
Number of weekend days		12.17** (4.571)		17.09 (11.919)
Average Consumption	729.4		788.63	
Observations	28,258	28,258	2,015	2,015
R-squared	0.72	0.72	0.76	0.76
Adj. R-squared	0.71	0.71	0.74	0.74

Robust standard errors in parentheses. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

*Note:* All these specifications also include year (2004-2011), state, month, day of the week, payday and household dummy indicators and controls for household size, age and presence of children, race, ethnicity, age and education of the household head and income of the household. Full set of results are available upon request.

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**APPENDIX**

**Appendix Table 1: SNAP eligibility criteria for household based on income and number of components.**

Household Size	Gross Monthly Income (USDA requirements)*	Year Income Thresholds (as we use)
1	1245	<15,000
2	1,681	<20,000
3	2,116	<25,000
4	2,552	<30,000
5	2,987	<35,000
6	3,423	<40,000
7	3,858	<45,000
8	4,294	<50,000
9 +	436 (each additional member)	<60,000

\* source: <http://www.fns.usda.gov/snap/eligibility>

**Appendix Table 2: Food Stamps Distribution Schedule, by State over the Study Period**

State Name	2004	2005	2006	2007	2008	2009	2010	2011	2012	
Alabama	4 <sup>th</sup> -18 <sup>th</sup>					4 <sup>th</sup> - 23 <sup>rd</sup>				
Alaska	1 <sup>st</sup>									
Arizona	1 <sup>st</sup> -13 <sup>th</sup>									
Arkansas	5 <sup>th</sup> , 10 <sup>th</sup> , 15 <sup>th</sup>	*	4 <sup>th</sup> , 5 <sup>th</sup> , 8 <sup>th</sup> - 13 <sup>th</sup>							
California	1 <sup>st</sup> -10 <sup>th</sup>									
Colorado	1 <sup>st</sup> -10 <sup>th</sup>									
Connecticut	1 <sup>st</sup> -3 <sup>rd</sup>									
Delaware	5 <sup>th</sup> - 11 <sup>th</sup>									
D.C.	1 <sup>st</sup> -10 <sup>th</sup>									
Florida	1 <sup>st</sup> - 15 <sup>th</sup>									
Georgia	5 <sup>th</sup> - 14 <sup>th</sup>							*		
Hawaii	1 <sup>st</sup> , 3 <sup>rd</sup> , 5 <sup>th</sup>					3 <sup>rd</sup> , 5 <sup>th</sup>				
Idaho	1 <sup>st</sup> - 5 <sup>th</sup>					1 <sup>st</sup>				
Illinois	1 <sup>st</sup> , 3 <sup>rd</sup> , 8 <sup>th</sup> , 11 <sup>th</sup> , 14 <sup>th</sup> , 17 <sup>th</sup> , 21 <sup>st</sup> , 23 <sup>rd</sup>						*	1 <sup>st</sup> , 3 <sup>rd</sup> -4 <sup>th</sup> , 7 <sup>th</sup> -8 <sup>th</sup> , 10 <sup>th</sup> -11 <sup>th</sup> , 14 <sup>th</sup> , 17 <sup>th</sup> , 19 <sup>th</sup> , 21 <sup>st</sup> , 23 <sup>rd</sup>		
Indiana	1 <sup>st</sup> - 10 <sup>th</sup>									
Iowa	1 <sup>st</sup> - 10 <sup>th</sup>									
Kansas	1 <sup>st</sup> - 10 <sup>th</sup>									
Kentucky	1 <sup>st</sup> - 10 <sup>th</sup>									
Louisiana	5 <sup>th</sup> - 14 <sup>th</sup>									
Maine	10 <sup>th</sup> - 14 <sup>th</sup>									
Maryland	1 <sup>st</sup> - 10 <sup>th</sup>									
Massachusetts	1 <sup>st</sup> - 14 <sup>th</sup>									
Michigan	1 <sup>st</sup> - 9 <sup>th</sup>							*	3 <sup>rd</sup> , 5 <sup>th</sup> , 7 <sup>th</sup> , 9 <sup>th</sup> , 11 <sup>th</sup> , 13 <sup>th</sup> , 15 <sup>th</sup> , 17 <sup>th</sup> , 19 <sup>th</sup> , 21 <sup>st</sup>	
Minnesota	4 <sup>th</sup> - 13 <sup>th</sup>									
Mississippi	5 <sup>th</sup> - 19 <sup>th</sup>									
Missouri	1 <sup>st</sup> - 22 <sup>nd</sup>									
Montana	2 <sup>nd</sup> - 6 <sup>th</sup>									
Nebraska	1 <sup>st</sup> - 5 <sup>th</sup>									
Nevada	1 <sup>st</sup>									
New Hampshire	5 <sup>th</sup>									
New Jersey	1 <sup>st</sup> - 5 <sup>th</sup>									
New Mexico	1 <sup>st</sup> - 20 <sup>th</sup>									
North Carolina	3 <sup>rd</sup> - 12 <sup>th</sup>							*	5 <sup>th</sup> , 7 <sup>th</sup> , 9 <sup>th</sup> , 11 <sup>th</sup> , 13 <sup>th</sup> , 15 <sup>th</sup> , 17 <sup>th</sup> , 19 <sup>th</sup> , 21 <sup>st</sup>	
North Dakota										

State Name	2004	2005	2006	2007	2008	2009	2010	2011	2012	
Ohio**	1 <sup>st</sup> - 10 <sup>th</sup>									
Oklahoma	1 <sup>st</sup>							*	1 <sup>st</sup> , 5 <sup>th</sup> , 7 <sup>th</sup>	
Oregon	1 <sup>st</sup> - 9 <sup>th</sup>									
Pennsylvania**	1 <sup>st</sup> - 3 <sup>rd</sup> , 7 <sup>th</sup> - 11 <sup>th</sup> , 14 <sup>th</sup> - 16 <sup>th</sup>				1 <sup>st</sup> - 10 <sup>th</sup>					
Rhode Island	1 <sup>st</sup>									
South Carolina	1 <sup>st</sup> - 9 <sup>th</sup>							*		
South Dakota	10 <sup>th</sup>									
Tennessee	1 <sup>st</sup> - 10 <sup>th</sup>							*		
Texas	1 <sup>st</sup> , 3 <sup>rd</sup> , 5 <sup>th</sup> - 7 <sup>th</sup> , 11 <sup>th</sup> - 13 <sup>th</sup> , 15 <sup>th</sup>									
Utah	5 <sup>th</sup> , 11 <sup>th</sup> , 15 <sup>th</sup>									
Vermont	1 <sup>st</sup>									
Virginia	1 <sup>st</sup>							*		
Washington	1 <sup>st</sup> - 10 <sup>th</sup>									
West Virginia	1 <sup>st</sup> - 9 <sup>th</sup>									
Wisconsin	2 <sup>nd</sup> - 3 <sup>rd</sup> , 5 <sup>th</sup> - 6 <sup>th</sup> , 8 <sup>th</sup> - 9 <sup>th</sup> , 11 <sup>th</sup> - 12 <sup>th</sup> , 14 <sup>th</sup> - 15 <sup>th</sup>									
Wyoming	1 <sup>st</sup> - 4 <sup>th</sup>									
*Changes during year										
**Variation within those days by county										